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SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

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[There are no amendments to this patent.]

Abstract

Objective

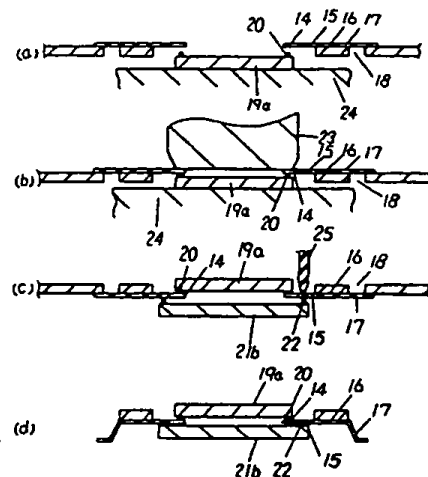
To obtain a compact, high-density, and high-speed multichip module.

Constitution

A multichip module is obtained in which a plurality of LSI chips (19) and (20) are joined respectively to both surfaces of the independent inner leads of a film carrier composed of flexible film (11) and leads (14) and (15) formed on the principal surface thereof, and in which the LSI chips are mounted by mutually opposing the front surfaces.

Effect

It is possible to obtain a compact, high-density, and high-speed multichip module.



- Key:
- 11 . Flexible film
 - 12 Sprocket hole
 - 13 Opening portion A
 - 14 Inner lead connected to LSI chip b
 - 15 Inner lead connected to LSI chip b
 - 16 Conductor wiring on flexible film
 - 17 Outer lead
 - 18 Opening portion B
 - 19 LSI Chip a
 - 20, 22 Protruding electrode
 - 21 LSI Chip b
 - 23 Pressurizing tool
 - 24 Stage
 - 25 Bonding tool

Claims

1. A semiconductor device characterized by the fact that the electrode of at least 1 semiconductor element is joined on the front surface of a lead group formed on a flexible film having an open part and projected at different lengths from said open part, and the electrode of at least not less than 1 second semiconductor element is joined to the back surface of the lead not joined with said first semiconductor element in said lead group.

2. A semiconductor device noted in Claim 1, characterized by the fact that the lead joined with the electrode of the first semiconductor element and one part of the lead joined to the electrode of the second semiconductor element are connected on a flexible film.

3. A semiconductor device noted in Claims 1 and 2, characterized by the fact that the electrode of the semiconductor element and the lead are joined via a projected electrode.

4. A manufacturing method for semiconductor device characterized by the fact that it is composed of a process of joining at least 1 first semiconductor element on the front surface of a lead group formed on a flexible film having an open part and projected at different lengths from said open part and a process of joining at least one second semiconductor element to the back surface of a lead not joined with said first semiconductor element in said lead group.

5. A manufacturing method for semiconductor device noted in Claim 4, characterized by the fact that the electrode of the semiconductor element and the lead are joined via a projected electrode.

6. A manufacturing method for semiconductor device characterized by the fact that it is composed of a process of joining the electrodes of the first semiconductor elements at a batch to the front surface of the lead group formed on a flexible film having an open part and projected at different lengths from said open part, and a process of successively joining the electrodes of the second semiconductor elements which are larger than said first semiconductor elements one each to the back surface of a lead not joined with said first semiconductor element in said lead group.

7. A manufacturing method for semiconductor device noted in Claim 6, characterized by the fact that the electrode of the semiconductor element and the lead are joined via a projected electrode.

8. A manufacturing method for semiconductor device characterized by the fact that it is composed of a process of joining the electrodes of the first semiconductor elements on the front surface of a lead group formed on a flexible film having an open part and projected at different lengths from said open part, a process of burn in testing said first semiconductor elements, and a process of joining the electrodes of the second semiconductor elements to the back surface of the lead not joined with said first semiconductor elements in said lead group in the area said first semiconductor element of favorable quality in said burn in test is joined.

9. A manufacturing method for semiconductor device noted in Claim 8, characterized by the fact that the electrode of the semiconductor element and the lead are joined via a projected electrode.

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